TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application Number	10/656,063
Filing Date	September 5, 2003
First Named Inventor	Hassan MOSTAFAVI
Art Unit	2882
Examiner Name	Hoon K. Song
Total Number of Pages in This Submission	
Attorney Docket Number	VM7031422003

ENCLOSURES (check all that apply)

☒ Fee Transmittal Form	☐ Drawing(s)	☐ After Allowance Communication to TC
☐ Fee Attached	☐ Licensing-related Papers	☐ Appeal Communication to Board of Appeals and Interferences
☒ Amendment / Reply	☐ Petition	☐ Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)
☒ After Final	☐ Petition to Convert to a Provisional Application	☐ Proprietary Information
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☐ Express Abandonment Request	☐ Request for Refund	1. Return Receipt Postcard
☐ Information Disclosure Statement	☐ CD, Number of CD(s) _____	2. Copy of form PTO/SB/08b submitted on March 22, 2005 (1 pg.)
	☐ Landscape Table on CD	
☐ Certified Copy of Priority Document(s)	**Remarks**	
☐ Reply to Missing Parts/ Incomplete Application		
☐ Reply to Missing Parts under 37 CFR1.52 or 1.53		
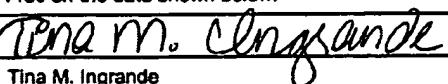
SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm	Bingham McCutchen LLP		
Signature	*[signature]*		
Printed Name	Gerald Chan		
Date	July 18, 2005	Reg. No.	51,541

CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.

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Typed or printed name	Tina M. Ingrande	Date	July 18, 2005

PA/52165182.1/2018721-7031422003

PTO/SB/17 (12-04v2)
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Effective on 12/08/2004. Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).		Complete if Known	
FEE TRANSMITTAL for FY 2005		Application Number	10/656,063
		Filing Date	September 5, 2003
		First Named Inventor	Hassan MOSTAFAVI
☐ Applicant claims small entity status. See 37 CFR 1.27		Examiner Name	Hoon K. Song
TOTAL AMOUNT OF PAYMENT	($) 300	Art Unit	2882
		Attorney Docket No.	VM7031422003

JUL 2 0 2005 OIPE

METHOD OF PAYMENT (check all that apply)

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☒ Deposit Account   Deposit Account Number: 50-2518   Deposit Account Name: Bingham McCutchen LLP

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

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FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES

	FILING FEES		SEARCH FEES		EXAMINATION FEES		
		Small Entity		Small Entity		Small Entity	
Application Type	Fee ($)	Fee($)	Fee($)	Fee($)	Fee($)	Fee($)	Fees Paid ($)
Utility	300	150	500	250	200	100	____
Design	200	100	100	50	130	65	____
Plant	200	100	300	150	160	80	____
Reissue	300	150	500	250	600	300	____
Provisional	200	100	0	0	0	0	____

2. EXCESS CLAIM FEES

Fee Description	Fee ($)	Small Entity Fee ($)
Each claim over 20 (including Reissues)	50	25
Each independent claim over 30 (including Reissues)	200	100
Multiple dependent claims	360	180

Total Claims	Extra Claims	Fee($)	Fee Paid ($)	Multiple Dependent Claims	
				Fee ($)	Fee Paid ($)
53 -47 (HP) =	6	x 50 =	300	____	____

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims	Extra Claims	Fee($)	Fee Paid ($)
9 - 9 (HP) =	____	x ____ =	____

HP = highest number of independent claims paid for, if greater than 3.

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee ($)	Fee Paid ($)
____ - 100 = ____	/ 50 = ____ (round up to a whole number) x		=	____

4. OTHER FEE(S)

Fees Paid ($)

Non-English Specification, $130 fee (no small entity discount) ____

Other (e.g., late filing surcharge) : _____ ____

SUBMITTED BY

Signature	*Gerald Chan (signature)*	Registration No. (Attorney/Agent)	51,541	Telephone	(650) 849-4960
Name (Print/Type)	Gerald Chan			Date	July 18, 2005

This collection of information is required by 37 CFR 1.136. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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PA/52153736.1/2018721-7031422003

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:)   Group Art Unit: 2882

    Hassan MOSTAFAVI)   Examiner: Song, Hoon K.

Serial No.: 10/656,063)

Filed: September 5, 2003)

For: SYSTEMS AND METHODS FOR)
PROCESSING X-RAY IMAGES)

AMENDMENT AFTER FINAL

MAIL STOP AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In response to the Final Office Action mailed on May 18, 2005, kindly amend the application in accordance with the following amendment sheet(s).

    Amendments to the Claims begin on page 2.

    Remarks begin on page 10.

AMENDMENTS TO THE CLAIMS

Please amend claims 1, 8, 11, 18, 25, 28, 35, 40, and 43, and insert new claims 48-53. A complete listing of the current pending claims is provided below and supersedes all previous claim lists.

1.   (Currently Amended) A method of processing a x-ray image, comprising:

collecting a first x-ray image and a second x-ray image;

determining a composite image based on the first and second x-ray images;

collecting a third x-ray image, wherein at least a portion of the first x-ray image and at least a portion of the third x-ray images image comprise images of a same portion of an object; and

enhancing a feature in the third x-ray image by adjusting the third x-ray image based on the composite image.

2.   (Original) The method of claim 1, wherein the first, second, and third x-ray images are generated in a sequence.

3.   (Original) The method of claim 1, wherein the first, second, and third x-ray images each contains an image of at least a portion of an animal body.

4.   (Original) The method of claim 1, wherein the determining a composite image comprises performing a image averaging on the first and second x-ray images.

5.   (Original) The method of claim 4, wherein the image averaging is performed using a boxcar averaging technique.

6.   (Original) The method of claim 4, wherein the image averaging is performed based on a weighted average.

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7.   (Original) The method of claim 1, wherein the adjusting comprises subtracting the composite image from the third x-ray image.

8.   (Currently Amended) A system for processing a x-ray image, comprising:

 means for collecting a first x-ray image and a second x-ray image;

 means for determining a composite image based on the first and second x-ray images;

 means for collecting a third x-ray image, wherein at least a portion of the first x-ray image and at least a portion of the third x-ray ~~images~~ image comprise images of a same portion of an object; and

 means for enhancing a feature in the third x-ray image by adjusting the third x-ray image based on the composite image.

9.   (Original) The system of claim 8, wherein the means for determining a composite image comprises means for performing an image averaging on the first and second x-ray images.

10.   (Original) The system of claim 8, wherein the means for adjusting comprises means for subtracting the composite image from the third x-ray image.

11.   (Currently Amended) A computer readable medium having a set of stored instructions, the execution of which causes a process to be performed, the process comprising:

 collecting a first x-ray image and a second x-ray image;

 determining a composite image based on the first and second x-ray images;

 collecting a third x-ray image, wherein at least a portion of the first x-ray image and at least a portion of the third x-ray ~~images~~ image comprise images of a same portion of an object; and

 enhancing a feature in the third x-ray image by adjusting the third x-ray image based on the composite image.

12.   (Original) The computer readable medium of claim 11, wherein the first, second, and third x-ray images are generated in a sequence.

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13.   (Original) The computer readable medium of claim 11, wherein the first, second, and third x-ray images each contains an image of at least a portion of an animal body.

14.   (Original) The computer readable medium of claim 11, wherein the determining a composite image comprises performing an image averaging on the first and second x-ray images.

15.   (Original) The computer readable medium of claim 14, wherein the image averaging is performed using a boxcar averaging technique.

16.   (Original) The computer readable medium of claim 14, wherein the image averaging is performed based on a weighted average.

17.   (Original) The computer readable medium of claim 11, wherein the adjusting comprises subtracting the composite image from the third x-ray image.

18.   (Currently Amended) A method of processing a x-ray image, comprising:
       collecting one or more x-ray images;
       determining a composite image based on the one or more x-ray images;
       collecting an input x-ray image, wherein at least a portion of one of the one or more x-ray images and at least a portion of the input x-ray image comprise images of a same portion of an object; and
       enhancing a feature of the input x-ray image based on the composite image.

19.   (Original) The method of claim 18, wherein the collecting the one or more x-ray images comprises generating the one or more x-ray images in a sequence.

20.   (Original) The method of claim 18, wherein the input x-ray image contains an image of at least a portion of an animal body.

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21.   (Original) The method of claim 18, wherein the determining a composite image comprises performing an image averaging on the one or more x-ray images.

22.   (Original) The method of claim 21, wherein the image averaging is performed using a boxcar averaging technique.

23.   (Original) The method of claim 21, wherein the image averaging is performed based on a weighted average.

24.   (Original) The method of claim 18, wherein the enhancing comprises subtracting the composite image from the input x-ray image.

25.   (Currently Amended) A system for processing an image, comprising:

          means for collecting one or more x-ray images;

          means for determining a composite image based on the one or more x-ray images;

          means for collecting an input x-ray image, wherein at least a portion of one of the one or more x-ray images and at least a portion of the input x-ray image comprise images of a same portion of an object; and

          means for enhancing a feature of the input x-ray image based on the composite image.

26.   (Original) The system of claim 25, wherein the means for determining a composite image comprises means for performing an image averaging on the one or more x-ray images.

27.   (Original) The system of claim 25, wherein the means for enhancing comprises means for subtracting the composite image from the input x-ray image.

28.   (Currently Amended) A computer readable medium having a set of stored instructions, the execution of which causes a process to be performed, the process comprising:

          collecting one or more x-ray images;

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determining a composite image based on the one or more x-ray images;

collecting an input x-ray image, wherein <u>at least a portion of one of</u> the one or more x-ray images and <u>at least a portion of</u> the input x-ray image comprise images of a same portion of an object; and

enhancing a feature of the input x-ray image based on the composite image.

29.   (Original) The computer readable medium of claim 28, wherein the collecting the one or more images comprises generating the one or more x-ray images in a sequence.

30.   (Original) The computer readable medium of claim 28, wherein the input x-ray image contains an image of at least a portion of an animal body.

31.   (Original) The computer readable medium of claim 28, wherein the determining a composite image comprises performing an image averaging on the one or more x-ray images.

32.   (Original) The computer readable medium of claim 31, wherein the image averaging is performed using a boxcar averaging technique.

33.   (Original) The computer readable medium of claim 31, wherein the image averaging is performed based on a weighted average.

34.   (Original) The computer readable medium of claim 28, wherein the enhancing comprises subtracting the composite image from the input x-ray image.

35.   (Currently Amended) A method of processing a x-ray image, comprising:

obtaining a first x-ray image;

obtaining a second x-ray image, wherein the first and the second x-ray images are obtained using x-ray having an energy level<u>, and at least a portion of the first x-ray image and at least a portion of the second x-ray image comprise images of a same portion of an object</u>; and

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determining a composite image based on at least a portion of the first and second x-ray images.

36.   (Original) The method of claim 35, wherein the first and second x-ray images are generated in a sequence.

37.   (Original) The method of claim 35, wherein the first and second x-ray images each contains an image of at least a portion of an animal body.

38.   (Original) The method of claim 35, wherein the determining a composite image comprises subtracting at least a portion of the first x-ray image from at least a portion of the second x-ray image.

39.   (Original) The method of claim 35, further comprising determining a value associated with a contrast of the composite image.

40.   (Currently Amended) A system for processing a x-ray image, comprising:
        means for obtaining a first x-ray image;
        means for obtaining a second x-ray image, wherein the first and the second x-ray images are obtained using x-ray having an energy level, and at least a portion of the first x-ray image and at least a portion of the second x-ray image comprise images of a same portion of an object; and
        means for determining a composite image based on at least a portion of the first x-ray image and at least a portion of the second x-ray image.

41.   (Original) The system of claim 40, wherein the means for determining a composite image comprises means for subtracting at least a portion of the first x-ray image from at least a portion of the second x-ray image.

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42.   (Original) The system of claim 40, further comprising means for determining a value associated with a contrast of the composite image.

43.   (Currently Amended) A computer readable medium having a set of stored instructions, the execution of which causes a process to be performed, the process comprising:

obtaining a first x-ray image;

obtaining a second x-ray image, wherein the first and the second x-ray images are obtained using x-ray having an energy level, and at least a portion of the first x-ray image and at least a portion of the second x-ray image comprise images of a same portion of an object; and

determining a composite image based on at least a portion of the first and second x-ray images.

44.   (Original) The computer readable medium of claim 43, wherein the first and second x-ray images are generated in a sequence.

45.   (Original) The computer readable medium of claim 43, wherein the first and second x-ray images each contains an image of at least a portion of an animal body.

46.   (Original) The computer readable medium of claim 43, wherein the determining a composite image comprises subtracting at least a portion of the first x-ray image from at least a portion of the second x-ray image.

47.   (Original) The computer readable medium of claim 43, wherein the process further comprising determining a value associated with a contrast of the composite image.

48.   (New) The method of claim 1, wherein the feature comprises a moving feature.

49.   (New) The system of claim 8, wherein the feature comprises a moving feature.

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50. (New) The computer readable medium of claim 11, wherein the feature comprises a moving feature.

51. (New) The method of claim 35, wherein the first and the second x-ray images are generated using an imaging device that remains stationary between a first time at which the first x-ray image is generated and a second time at which the second x-ray image is generated.

52. (New) The system of claim 40, wherein the means for obtaining the first x-ray image and the means for obtaining the second x-ray image comprises an imaging device that remains stationary between a first time at which the first x-ray image is generated and a second time at which the second x-ray image is generated.

53. (New) The computer readable medium of claim 43, wherein the first and the second x-ray images are generated using an imaging device that remains stationary between a first time at which the first x-ray image is generated and a second time at which the second x-ray image is generated.

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REMARKS

Amendments to claims 1, 8, 11, 18, 25, 28, 35, 40, and 43 are for the purpose of clarifying what Applicant regards as the invention. No new matter has been added.

I.   CLAIM REJECTIONS UNDER 35 U.S.C. § 112

Claims 38, 41, and 46 stand rejected under 35 U.S.C. § 112 as allegedly being indefinite. According to the Office Action, it is unclear how to generate a composite image by subtracting one image from another. Applicant respectfully directs the Examiner's attention to paragraphs 76, which describes in one embodiment that a composite image is generated as a result of subtracting one image from another.

II.   CLAIM REJECTIONS UNDER 35 U.S.C. § 102

Claims 1-4, 6-14, 16-21, 23-31, and 33-34 stand rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,434,215 (Cesmeli). Claims 35-41 and 43-47 stand rejected under 35 U.S. C. 102(e) as being anticipated by U.S. Patent No. 6,678,399 (Doi). Applicant respectfully notes that in order to sustain a rejection under §102, each element in the rejected claim must be found, either expressly or inherently, in the cited reference.

Claims 1, 8, 11, 18, 25, and 28

Claims 1, 8, and 11 each recites *enhancing a feature* in a x-ray image (emphasis added). Claims 18, 25, and 28 each recites a similar limitation. Cesmeli does not disclose or suggest such limitation. Rather, Cesmeli discloses determining a region of interest by subtracting an average set of views from a view set (column 5, lines 8-30). As such, Cesmeli does not disclose or suggest enhancing a feature in an image, as recited in each of claims 1, 8, 11, 18, 25, and 28. For at least the foregoing reason, claims 1, 8, 11, 18, 25, and 28, and their respective dependent claims, are believed allowable over Cesmeli.

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<u>Claims 35, 40, and 43</u>

Claims 35, 40, and 43 each recites obtaining a first x-ray image and a second x-ray image, wherein at least a portion of the first x-ray image and at least a portion of the second x-ray image comprise images of a same portion of an object. Doi does not disclose or suggest such limitation. Rather, Doi discloses obtaining a plurality of section images at *different cross sectional planes* of an object (see figures 1 and 7a-7c). As such, Doi discloses obtaining section images of *different portions* of an object. For at least the foregoing reason, claims 35, 40, and 43, and their respective dependent claims, are believed allowable over Doi.

III.   <u>INFORMATION DISCLOSURE STATEMENT</u>

Applicant submitted an Information Disclosure Statement on March 22, 2005. However, we have not yet received confirmation that reference number 1 listed on form PTO/SB/08b has been initialed and considered. Attached hereto is a copy of the form PTO/SB/08b (1 pg.). Applicant hereby respectfully requests that the reference listed on form PTO/SB/08b be initialed and considered by the Examiner.

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CONCLUSION

Based on the foregoing, all remaining claims are believed in condition for allowance. If the Examiner has any questions or comments regarding this amendment, please contact the undersigned at the number listed below.

The Commissioner is authorized to charge any fees due in connection with the filing of this document to Bingham McCutchen's Deposit Account No. **50-2518**, referencing billing number **7031422003**. The Commissioner is authorized to credit any overpayment or to charge any underpayment to Bingham McCutchen's Deposit Account No. **50-2518**, referencing billing number **7031422003**.

Respectfully submitted,
Bingham McCutchen LLP

Dated: July 18, 2005   By: _____
Gerald Chan
Reg. No. 51,541

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		Complete if Known	
Substitute for form 1449B-PTO	JUL 2 0 2005	**Application Number**	10/656,063
INFORMATION DISCLOSURE STATEMENT BY APPLICANT		**Filing Date**	September 5, 2003
		First Named Inventor	Hassan MOSTAFAVI
		Art Unit	2882
(use as many sheets as necessary)		**Examiner Name**	Hoon K. Song
Sheet	1	of	2	**Attorney Docket Number**	VM7031422003

NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No.[1]	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher city and/or country where published	T[2]
	1	International Search Report and Written Opinion dated February 15, 2005 for PCT/US2004/029277	

Examiner's Signature		Date Considered	